

## Undescribed Species of Crane Flies from the Himalaya Mountains (Diptera: Tipulidae), XX<sup>1</sup>

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**Abstract:** Six new species of crane flies from Uttar Pradesh, Sikkim, and Assam are described, these being *Limnophila (Eloeophila) diacis*, *L. (E.) subdilata*, *Atarba (Atarbodes) crassispina*, *Rhabdomastix (Sacandaga) normalis*, *Ormosia (Parormosia) saturnina*, and *Erioptera (Erioptera) connata*.

### *Limnophila (Eloeophila) diacis*, n. sp.

Size medium (wing of male to about 7 mm.); antennal flagellum bicolored; knobs of halteres brownish black; legs yellow, femoral tips broadly brownish black; wings whitened, conspicuously patterned with brown, including about seven larger costal areas, markings of the interspaces small and numerous, several not reaching the veins; male hypopygium with lateral spine of outer dististyle at near two-thirds the length; phallosome with gonapophyses appearing as slender acute darkened spines that are directed caudad, lying parallel to the relatively short slender aedeagus.

MALE: Length about 5.5–5.8 mm.; wing 6.2–7.3 mm.; antenna about 1.3–1.5 mm.

Rostrum brownish gray, palpi black. Antennae with scape and pedicel brownish black, flagellum bicolored, yellow, bases of segments narrowly dark brown; segments oval with long verticils. Head light gray.

Pronotum obscure yellow medially, sides darker. Mesonotal praescutum with disk virtually covered by three brownish black stripes that are gray pruinose, humeral region yellowed; posterior sclerites brown, gray pruinose, mediotergite with a narrow black central stripe. Pleura gray, lined longitudinally with dark brown, dorsal stripe including the propleura, anepisternum and dorsal pteropleurite and pleurotergite. Halteres brownish yellow, more yellowed basally, knobs brownish black. Legs with coxae and trochanters brownish yellow, gray pruinose; femora yellow, tips broadly brownish black, outer end slightly paler; remainder of legs yellow. Wings with ground whitened, heavily patterned with brown, including seven larger costal areas, the proximal two confluent behind, third area forming a complete band at level of origin of *Rs* and the supernumerary crossvein in cell *M*; fourth and fifth costal areas extensive, including the stigmal region, united behind over the *r-m* crossvein; supernumerary crossvein in cell *M* lying in the darkened cross band; darkenings of the interspaces small and numerous, several not connected with the veins; veins light brown, slightly darker in the patterned areas. Venation: *m-cu* at near one-third *M*<sub>3+4</sub>.

Abdomen laterally dark brown, central parts of both sternites and tergites yellowed, outer

<sup>1</sup> Contribution from the Entomological Laboratory, University of Massachusetts.

<sup>2</sup> Part XIX of this series of papers was published in the Journal of the New York Entomological Society, **78**: 201–205, 1970. Six further species are described, all from India, in Uttar Pradesh, Sikkim and Assam, collected by the veteran entomologist, Dr. Fernand Schmid, to whom I again express my thanks for this series of Himalayan Tipulidae.

segments more uniformly dark brown. Male hypopygium with outer dististyle terminating in a short curved outer spine and a stouter inner point, outer margin at near two-thirds the length with a conspicuous appressed spine; inner style narrowed on outer half. Phallosome small, gonapophyses appearing as slender acute darkened spines that are directed caudad, lying parallel to the relatively short slender aedeagus.

HOLOTYPE: ♂, Lata, Pauri Garhwal, Kumaon, Uttar Pradesh, India, 7,500 feet, July 6, 1958 (Schmid).

PARATOPOTYPES: two ♂♂, pinned with type.

PARATYPES: 2 ♂♂ on a single pin, Rupa, Northeast Frontier Agency, Kameng, Assam, India, May 2-3, 1961 (Schmid).

Other small regional species having the wing pattern generally as in the present fly include *Limnophila (Elocophila) bicolorata* Alexander, of Nepal-Assam, and *L. (E.) fascipennis* Brunetti, of Assam, all differing among themselves in hypopygial structure, especially the outer dististyle and the phallosome.

*Limnophila (Elocophila) subdilata*, n. sp.

Characters generally as in *perdilata*; wings not conspicuously dilated opposite outer end of vein 2nd A as in males of *perdilata*; wing pattern including a conspicuous band at level of origin of Rs, paler behind, ending before apex of cell 2nd A, remainder of this cell commonly with darkenings that attain the posterior border, in cases with this part of cell unpatterned; male hypopygium with lobe of margin of outer dististyle narrow.

MALE: Length about 6-6.5 mm.; wing 7-8 mm.

FEMALE: Length about 7-7.5 mm.; wing 8.5 mm.

Head gray, palpi brownish black. Antennae with basal segments light yellow, flagellum light brown.

Thorax light gray, with an interrupted brown pattern that includes a central line on pronotum, three narrow stripes on anterior half of praescutum, with broader lateral margins on posterior part, the remaining darkened pattern of praescutum, scutum and pleura paler brown. Halteres with stem yellow, knob dark brown. Legs with coxae brownish gray, trochanters obscure brownish yellow; femora yellow with a broad dark brown subterminal ring, the apex narrowly paler brown; tibiae yellow, tips narrowly darkened; proximal tarsal segments yellow, extreme tips and outer segments brown. Wings not conspicuously dilated opposite outer end of vein 2nd A in male, as in *perdilata*. Darkened pattern including a major brown band at level of origin of Rs, paler behind, terminating before apex of cell 2nd A, remainder of cell with darkened areas that reach the posterior border, in certain specimens (as in the paratypes from Gawana, Khumyara and Tarsali) posterior margin of cell 2nd A unpatterned; a nearly solidly darkened triangular area in stigmal region; veins of the interspaces with small brown spots, those in cubital and anal fields more elongate.

Male hypopygium with the outer dististyle of the *perdilata* type, the apex a slender curved spine; lobe of outer margin of style narrow, in *perdilata* much broader, its apex truncate.

HOLOTYPE: ♂, Hanuman Chatti, Pauri Garhwal, Kumaon, Uttar Pradesh, 9,000 feet June 17, 1958 (Schmid).

ALLOTOPOTYPE: ♀, pinned below type.

PARATOPOTYPE: ♀, lowermost of three specimens on pin with types. Paratypes, two ♂♂, Binaik Chatti, Pauri Garhwal, 7,000–7,500 feet, June 16, 1958; one ♂, Gawana, Teri Garhwal, 6,000 feet, May 23, 1958; one ♂, Khumyara, Pauri Garhwal, 4,300–5,000 feet, May 4, 1958; one ♂, Tarsali, Pauri Garhwal, 6,000–7,000 feet, May 6, 1958 (all Schmid).

The most similar described species is *Limnophila (Elocophila) perdilata* Alexander, as discussed above.

*Atarba (Atarbodes) crassispina*, n. sp.

Allied to *flava* and *decincta*; general coloration of body light yellow, two subterminal abdominal segments very slightly darkened; male hypopygium with spines of outer dististyle few in number, very stout, their diameter across base nearly one-half the length of spine.

MALE: Length about 4.8 mm.; wing 5.3 mm.; antenna about 1 mm.

Rostrum, palpi and antennae yellow. Head uniformly yellow.

Thorax light fulvous yellow, unpatterned. Halteres yellow. Legs with coxae and trochanters yellow; remainder of legs broken. Wings yellow, veins only slightly darker than the ground. Veins beyond general level of origin of *Rs* with trichia, with a few on outer ends of basal section of *Cu*<sub>1</sub> and both Anals. Venation: *Sc*<sub>1</sub> ending about opposite two-thirds *Rs*, branches of the latter slightly divergent, at margin cell *R*<sub>3</sub> about twice as extensive as cell *R*<sub>2</sub>; *m-cu* shortly beyond fork of *M*.

Abdomen yellow, segments seven and eight weakly darkened. Male hypopygium with outer dististyle blackened, short-clavate, macelike in appearance; outwardly with a double row of very stout spines, including about six or seven on either side, the stoutest spines across their bases about one-half the length of spine; inner style slightly longer, parallel-sided, apex obtuse. Phallosome with each gonapophysis appearing as a nearly straight blade, aedeagus slightly longer; paired elements very pale, straight, virtually contiguous at midline.

HOLOTYPE: ♂, Rahung, Northeast Frontier Agency, Kameng, Assam, 7,000 feet, April 25, 1961 (Schmid).

The present species is generally similar to *Atarba (Atarbodes) decincta* Alexander and *A. (A.) flava* Brunetti, differing especially in hypopygial characters, including the unusually stout spines of the outer dististyle. In the species listed these spines are more numerous and more slender, in the extreme cases being approximately five times as long as their basal diameter.

*Rhabdomastix (Sacandaga) normalis*, n. sp.

General coloration of head and thorax light gray, abdomen dark brown, hypopygium yellowish brown; antennae 16-segmented, with no fusion of proximal flagellar segments; halteres light yellow; legs light brown; wings subhyaline, veins pale brown; veins *R*<sub>4</sub> and *R*<sub>2+3+4</sub> subequal, *R*<sub>5</sub> and *M*<sub>1+2</sub> with sparse trichia; ovipositor with cerci very long and slender.

MALE: Length about 2.9–3 mm.; wing 3.4–3.6 mm.; antenna about 0.7–0.75 mm.

FEMALE: Length about 4 mm.; wing 4 mm.

Rostrum obscure yellow, heavily gray pruinose, palpi brown. Antennae black; flagellum

with fourteen distinct segments, with no fusion of basal elements. Head light gray; anterior vertex very broad.

Thorax almost uniformly light gray; praescutum with four vaguely indicated darker stripes, intermediate pair widely separated, tuberculate pits and pseudosutural foveae blackened, conspicuous. Halteres light yellow. Legs with coxae light brown, sparsely pruinose, trochanters obscure yellow; remainder of legs light brown. Wings subhyaline, slightly more yellowed basally, veins pale brown. Very sparse trichia on outer ends of veins  $R_3$  and  $M_{1+2}$ . Venation:  $Sc_1$  ending about opposite midlength of  $R_5$ ,  $Sc_2$  not apparent; vein  $R_3$  short, erect in type, suberect in other specimens, distance on costa between  $R_{1+2}$  and  $R_3$  about one and one-half times the length of the latter vein; vein  $R_4$  unusually long, subequal to  $R_{2+3+4}$ ; basal section of vein  $M_3$  variable in length, in cases, including holotype, very short;  $m-cu$  at from one-third to one-half  $M_{3+4}$ ; cell  $2nd\ A$  broad.

Abdomen dark brown, hypopygium yellowish brown. Ovipositor with cerci very long and slender, nearly straight. Male hypopygium with outer dististyle only slightly expanded at outer end. Gonapophysis with apical blade elongate, narrow, about twice as broad as the stem.

HOLOTYPE: ♂, Ranibagh, Naini Tal, Pauri Garhwal, Kumaon, Uttar Pradesh, India, 1,778 feet, October 13, 1958 (Schmid).

ALLOTYPE: ♀, Salkhola, Pauri Garhwal, 4,240 feet, August 22, 1958.

PARATOPOTYPES: 2 ♂ ♂, pinned with type. Paratype, 1 male, with allotype.

The most similar regional species include *Rhabdomastix (Sacandaga) almorae* Alexander and *R. (S.) emodicola* Alexander, which differ in the short vein  $R_4$  and in further minor characters. The first named species has the proximal flagellar segments united into a fusion-segment whereas in the present fly all flagellar segments are distinct, suggesting the specific name.

*Ormosia (Parormosia) saturnina*, n. sp.

Thoracic dorsum light brown, unpatterned, postnotum and pleura darker brown; halteres light yellow; legs black; wings strongly infuscated, restrictedly variegated by whitened areas, including especially the cord and outer end of cell  $1st\ M_2$ , the color including the veins; abdomen dark brown.

FEMALE: Length about 6 mm.; wing 6.5 mm.

Rostrum and palpi black. Antennae basally light yellow, outer segments brownish black. Head dark brown.

Thoracic dorsum light brown, unpatterned, pseudosutural foveae almost concolorous, postnotum darker brown. Pleura dark brown to brownish black, dorsopleural membrane brownish yellow. Halteres light yellow. Legs with coxae brownish black, trochanters obscure yellow; femora black, remainder of legs slightly paler, brownish black. Wings strongly infuscated, especially the costal third, sparsely variegated by paler areas that include broad diffuse more whitened markings at cord and outer end of cell  $1st\ M_2$ , with a smaller spot at origin of  $R_5$ , the pale color including the veins; stigma with a small more yellowed mark at either end, the outer one smaller; veins pale brown, distal section of  $R_5$  darker brown. Venation:  $R_2$  about three times  $R_{2+3}$ ;  $m-cu$  at fork of  $M$ .

Abdomen uniformly dark brown. Ovipositor with valves very slender, cerci gently up-curved, more yellowed.

HOLOTYPE: ♀, Jhum La, Northeast Frontier Agency, Kameng, Assam, India, 7,800 feet, May 13–14, 1961 (Schmid).

The most similar species is *Ormosia (Parormosia) discalba* Alexander, from Northeastern Burma that differs evidently in the wing markings, the whitened pattern being reduced to a single small area at the fork of vein *M*.

*Erioptera (Erioptera) connata*, n. sp.

Allied to *litostyla*; general coloration yellowed, head slightly darker; antennae, halteres and legs yellow; wings pale whitish yellow; male hypopygium with outer dististyle a slender smooth rod that narrows to a subacute point, inner style about two-thirds as long, an entirely pale blade that bears a small fingerlike lobule at near midlength of outer margin; gonapophysis a slender blackened spine; aedeagus a flattened subhyaline shield without a lateral blackened spine, the two enclosed filaments terminating before the apex.

MALE: Length about 4.5 mm.; wing 4.7 mm.; antenna about 1 mm.

Rostrum light brown, palpi dark brown, terminal segment about one-fourth longer than the penultimate and more slender. Antennae yellow. Head brown, eyes very large.

Pronotum light yellow. Mesonotum fulvous, sides of praescutum more yellowed. Pleura fulvous with a narrow pale brown longitudinal stripe from and including the fore coxae, continued backward to base of abdomen, passing beneath the halteres. Halteres uniformly yellow. Legs with fore coxae darkened, as described, remaining coxae and all trochanters light yellow; remainder of legs uniformly yellow. Wings pale whitish yellow, veins slightly darker yellow, trichia brown. Venation:  $R_{2+3+4}$  and  $R_{2+3}$  subequal; *m-cu* at fork of *M*; vein *2nd A* very strongly sinuous at near midlength.

Abdomen yellowed, tergites vaguely infuscated medially, subterminal segments more extensively darkened. Male hypopygium with dististyles nearly terminal, outer apical angle of basistyle with very long setae, the longest about four-fifths the length of longer style. Outer dististyle a slender smooth rod, very gently curved, outer half more darkened; inner style about two-thirds as long, appearing as an entirely pale blade that narrows to an obtuse point, on outer margin at near midlength with an appressed fingerlike lobule. Gonapophysis a very slender blackened spine. Aedeagus a flattened subhyaline shield, the enclosed filaments ending before apex, margins of style not provided with a blackened spine as in *litostyla*.

HOLOTYPE: ♂, Doling, Sikkim, 5,900 feet, April 29, 1959 (Schmid).

In general appearance the present fly is similar to *Erioptera (Erioptera) litostyla* Alexander, likewise from Sikkim. Both species have the structure of the aedeagus generally the same, the genital filaments ending before the arched and flattened apex, in *litostyla* bearing a strong blackened spine that resembles the gonapophysis, presenting the appearance of four apophyses instead of the normal single pair.